1. A rotating anode x-ray device, comprising:

(a) a vacuum enclosure;

(b) an electron source and an anode disposed in said vacuum enclosure, said anode being mounted to a shaft and spaced apart from said electron source so that said anode receives electrons emitted by said electron source;

(c) a bearing assembly rotatably supporting said shaft upon which said anode is mounted;

(d) a bearing housing wherein said bearing assembly is substantially confined; and

(e) a heat sink at least partially disposed within said vacuum enclosure and including:

(i) a cooling block joined to said bearing housing and having at least one extended surface;

(ii) a shell joined to said cooling block and cooperating therewith to define a coolant chamber;

(ii) a means for transferring heat, said means for transferring heat facilitating transfer of heat from said cooling block to coolant disposed in said coolant chamber.

2. The x-ray device as recited in claim 1, further comprising at least one insulator, said at least one insulator being disposed about said shell so as to support said shell in a predetermined position inside said vacuum enclosure.

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3. The x-ray device as recited in claim 2, wherein said at least one insulator comprises two insulators.

4. The x-ray device as recited in claim 2, where said coolant chamber includes a coolant chamber entrance and coolant chamber exit.

5. The x-ray device as recited in claim 4, wherein said at least one insulator defines coolant inlet and outlet passageways in fluid communication with said coolant chamber entrance and coolant chamber exit, respectively.

6. The x-ray device as recited in claim 1, wherein said means for transferring heat comprises a post joined to said cooling block and including at least one extended surface in contact with said coolant disposed in said coolant chamber.

7. The x-ray device as recited in claim 1, wherein said means for transferring heat comprises at least one heat pipe attached to said cooling block and having an interior portion in fluid communication with a block coolant chamber defined by said cooling block and containing a volume of coolant.

8. The x-ray device as recited in claim 1, wherein said cooling block is at least partially received within the bearing housing.

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9. In an x-ray device having an evacuated housing wherein is disposed an anode mounted to a shaft rotatably supported by a bearing assembly, the bearing assembly being disposed in a bearing housing, an x-ray tube cooling system comprising:

(a) a heat sink at least partially disposed within the evacuated housing and including:

(i) a cooling block joined to the bearing housing and having at least one extended surface; and

(ii) a shell joined to said cooling block and cooperating with said cooling block to define a coolant chamber substantially enclosing said at least one extended surface, and said shell including a coolant chamber entrance and coolant chamber exit in fluid communication with said coolant chamber; and

(b) an external cooling unit in fluid communication with said coolant chamber entrance and coolant chamber exit and circulating a flow of coolant into contact with said at least one extended surface so as to remove at least some heat from the bearing assembly.

10. The x-ray tube cooling system as recited in claim 9, wherein said coolant comprises a dielectric fluid.

11. The x-ray tube cooling system as recited in claim 9, further comprising a coolant reservoir in which at least a portion of the x-ray device is disposed, said coolant reservoir being in fluid communication with said external cooling unit.

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12. The x-ray tube cooling system as recited in claim 9, wherein said heat sink includes at least one post joining said cooling block with said at least one extended surface.

13. The x-ray tube cooling system as recited in claim 9, wherein said heat sink includes at least one heat pipe attached to said cooling block and having an interior portion in fluid communication with a block coolant chamber defined by said cooling block and containing a volume of coolant.

14. The x-ray tube cooling system as recited in claim 9, wherein at least a portion of said heat sink is substantially composed of a metal selected from the group consisting of: copper, and copper alloys.

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15. In an x-ray device having an evacuated housing wherein is disposed an anode mounted to a shaft rotatably supported by a bearing assembly, the bearing assembly being disposed in a bearing housing, a heat sink for facilitating removal of at least some heat from the bearing assembly, the heat sink being at least partially disposed within the evacuated housing and comprising:

(a) a cooling block configured for attachment to the bearing housing and having at least one extended surface; and

(b) a shell joined to said cooling block and cooperating with said cooling block to define a coolant chamber substantially enclosing said at least one extended surface, and said shell including a coolant chamber entrance and coolant chamber exit in fluid communication with said coolant chamber.

16. The heat sink as recited in claim 15, wherein at least a portion of said cooling block is substantially composed of a metal selected from the group consisting of: copper, and copper alloys.

17. The heat sink as recited in claim 15, wherein said at least one extended surface comprises a plurality of annular fins.

18. The heat sink as recited in claim 15, wherein said at least one extended surface is substantially composed of a metal selected from the group consisting of: copper, and copper alloys.

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19. The heat sink as recited in claim 15, wherein said at least one extended surface is integral with said cooling block.

20. The x-ray device as recited in claim 15, wherein said cooling block is at least partially received within said shell.

21. The heat sink as recited in claim 15, further comprising at least one heat pipe attached to said cooling block and having an interior portion in fluid communication with a block coolant chamber defined by said cooling block and containing a volume of coolant.

22. The heat sink as recited in claim 21, wherein said at least one extended surface is joined to said at least one heat pipe.

23. The heat sink as recited in claim 15, further comprising at least one post joining said cooling block with said at least one extended surface.

24. The heat sink as recited in claim 23, wherein said at least one extended surface comprises a substantially continuous helical fin disposed about said at least one post.

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